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REMARKS

Applicants previously presented claims 1-3, 5-16, 18-22, 24, 25 and 27-30 for examination. The above-identified Office Action has rejected all of the claims. By this amendment, Applicants have amended claims 1, 13, 16 and 27 to further clarify the subject matter regarded as the invention; cancelled claims 28-30 without prejudice or disclaimer of the embodiments defined therein; and added claims 31-33. Accordingly, claims 1-3, 5-16, 18-22, 24, 25, 27 and 31-33 remain pending. Applicants respectfully request that the Examiner reconsider the application in light of the amendments and the remarks expressed herein.

Claim objections

Claims 28-30 were previously objected to but the claims have since been cancelled and the objections are now moot.

103 Rejections

- Claims 1-3, 5, 7, 9, 13, 16, 18, 20, 22, 24 and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei (US Pub. No. 2001/0007591 A1) in view of Kim (W. Kim and V. W. Sparrow, "Audio Application of the Parametric Array—Implementation through a Numerical Model," presented at the 113th Convention of the Audio Engineering Society, J. Audio Eng. Soc. (Abstracts), pp. 1-18, November 2002 , convention paper 5852.) in further view of Takahashi et al. (US Pat. No. 6,643,377, hereinafter "Takahashi");
- claims 6, 19 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim, in further view of Takahashi in further view of Kuriyama et al. (JP Pub. No. 1-109898, hereinafter Kuriyama);

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- claims 8 and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim in further view of Takahashi in further view of Norris et al. (US Pub. No. 2004/0052387 A1, hereinafter referred to as "Norris");
- claims 10 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim in further view of Takahashi in further view of Wiser et al. (US Pub. No. 2003/0009248 A1, hereinafter "Wiser");
- claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim in further view of Takahashi in further view of Wiser and in further view of Brain (Brain; Marshall, How USB Ports Work, October 11, 2002, www.howstuffworks.com/usb);
- claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim in further view of Takahashi in further view of Tokumo et al. (US Patent No. 4,476,571, hereinafter "Tokumo"); and
- claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei in view of Kim in further view of Takahashi in further view of Tanaka et al. (US Pat. No. 4,823,908, hereinafter "Tanaka").

For at least the reasons set forth below, the rejections are fully traversed.

Independent Claims

To reject the independent claims 1, 16 and 27, the Office Action relied on Pompei, Kim and Takahashi.

Initially, it is submitted that there is no motivation to combine any of these references in the manner that the Office Action proposes. The Office Action alleged that it would have been obvious to one of ordinary skill in the art to combine Pompei and Kim "since doing so is the use of a known technique (increasing beam width by increasing carrier frequency) to improve a similar device (ultrasonic system) in the same way." Applicants respectfully disagree.

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It is submitted that the limitations of "increasing beam width by increasing carrier frequency" are not commonly known in the art and are unexpected. Even a number of prior Office Actions have explicitly admitted such, as exemplified by the following citations, with emphasis added.

- "It is not commonly known in the art that increasing the frequency will result in increasing beam widths and therefore the specification is not enabling for one of ordinary skill in the art to make or use the invention as in claim 23." The last sentence on page 3 of the prior Office Action dated October 29, 2007.
- "Claims 1, 16, and 27 recited increasing the frequency of an ultrasonic signal and the beam width increases. This feature is not enabled, since the prior art teaches that as the frequency increases, the beam width decreases (see for example: sec 2.1 of Aoki et al. (K. Aoki et al., "Parametric Loudspeaker-Applied Examples," Electronics and Communications Japan, Part 3, Vol. 77, No. 1, 1994, pp. 64-74., see IDS filed 1/21/05. In the remarks filed 3/18/09, applicant provides an explanation for the unexpected results, however the reasons for the results recited by applicant (i.e. an increase in frequency results in an increase in beam width) are not apparent from applicant's explanation." The paragraph from page 2 to page 3 of the prior Office Action dated April 28, 2009.

Such clear admissions are strong evidence of non-obviousness of independent claims 1 and 16.

In addition, Pompei does not teach or suggest changing the ultrasonic frequency to change the beam width. Specifically, Pompei does not teach or suggest controlling the ultrasonic frequency of the ultrasonic signals so that if the ultrasonic frequency is increased, the attenuation and the width of the beam are also increased. On the contrary, Applicants submit that Pompei teaches away from such features.

Pompei teaches an audio system having increased bandwidth for generating airborne audio signals with reduced distortion. To reduce audible

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distortion, in its Paragraph 55, Pompei expressly teaches adjusting "the signal amplitude in proportion to the expected amount of decay at an assumed or actual distance from the acoustic transducer array 122 (see FIG. 1)." Based on the adjustment, frequency-dependent attenuation is significantly reduced, as shown in Pompei's FIGS. 6a-b. Consequently, Pompei's stated objective is to significantly reduce the attenuation as the ultrasonic frequency is increased. This is opposite to Applicants' claimed limitation of controlling the ultrasonic frequency of the ultrasonic signals so that if the ultrasonic frequency is increased, the attenuation and the width of the beam are also increased. Such difference in objectives between Pompei and Applicants' features should have led to non-obviousness in view of Pompei for Applicants' claims 1 and 16.

Separately, the Office Action admitted that Pompei in view of Kim do not teach the feature wherein the ultrasonic frequency is controlled including by selecting a carrier frequency from a predetermined set of carrier frequencies, which Applicants acknowledge. To remedy the deficiency, the Office Action argued that it would have been obvious to provide a set of carrier frequencies for driving the various transducers in Pompei so as to match ultrasonic carrier frequencies with each of Pompei's transducer.

The Office Action's argument relies on a premise that is opposite to Applicants' claimed invention in claims 1 and 16. Pompei's main stated objective is an audio system with increased bandwidth. To achieve such explicit objective to increase the bandwidth, Pompei introduces its various transducers that are different from each other "so that the center frequencies of the individual acoustic transducers 0-11 span a desired frequency range, thereby broadening the overall response of the acoustic transducer array 122" (Pompei [60]).

For Pompei to increase its system's bandwidth, Pompei's "various transducers" have to be different from each other to generate different frequencies. Then the sum of the many different frequencies will "span a desired frequency range." This is again diametrically opposite to Applicants' claimed feature (in claims 1 and 16) where the predetermined set of carrier frequencies

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are generated via a number of substantially identical sources working together to generate each of the carrier frequencies. In other words, Pompei intentionally makes its transducers to be different, while in claims 1 and 16, Applicants specifically claim a plurality of substantially identical sources working together.

To remedy the serious deficiencies in Pompei, the Office Action introduced Kim and Takahashi. However, neither Kim nor Takahashi overcome any of the deficiencies of Pompei noted above. Thus, Pompei, Kim and Takahashi do not, individually or in any combination, teach or suggest the claimed invention under claims 1 and 16.

As to Applicants' claim 27, none of the cited references, singly or in any combination, teaches or suggests a handheld electronic remote control to control a system for displaying video signals such that the handheld control includes a directional speaker whose audio output provides the audio portion of the video signals.

For at least the reasons set forth above, Applicants submit that independent claims 1, 16 and 27 are patentable over Pompei, Kim and Takahashi, alone or in any combination.

Dependent claims

The dependent claims 2-3, 5-15, 18-22, 24 and 25 respectively depend from and add additional features to independent claims 1 and 16. The Office Action cited Kuriyama, Norris, Wiser, Brain, Tokumo and Tanaka to remedy deficiencies in Pompei, Kim and Takahashi regarding the above dependent claims. Even if combining Pompei, Kim, Takahashi with Kuriyama, Norris, Wiser, Brain, Tokumo and Tanaka were appropriate, which Applicants respectfully disagree, and even if the references were actually combined, the above-noted deficiencies of Pompei remain.

Based on the foregoing, it is submitted that independent claims 1, 16 and 27 are patentably distinct from all the cited references. In addition, it is submitted that dependent claims 2-3, 5-15, 18-22, 24 and 25 are also patentably distinct for at least the same reasons. Further the independent or the dependent claims

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recite additional elements which when taken in the context of the claimed invention further patentably distinguish from the art of record. The additional limitations recited in the independent claims or the dependent claims are not further discussed as the above-discussed limitations are clearly sufficient to distinguish the claimed invention from the cited references, singly or in any combination. Thus, it is respectfully requested that the Examiner withdraw the rejection of all the pending claims under 35 USC §103(a).

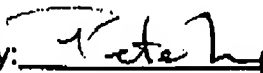
Summary

In view of the foregoing, it is respectfully requested that all outstanding rejections be reconsidered and withdrawn. Reconsideration of the application and an early Notice of Allowance for all of the pending claims, including the newly added claims 31-33 are earnestly solicited.

If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

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